Chapter 13
Cognitive and Organizational Complexity and Behavior: Implications for Organizational Design and Leadership

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ABSTRACT

Historical findings concerning the nature of the higher-order structural personality dimension of cognitive complexity and related conceptual systems and the sociotechnical model of organizational complexity are summarized, including the relationship of the two. The author’s own research findings on early trainer and traumatic event effects on one’s complexity level are described. The relation of complexity level to creativity, leader behavior and influence, interpersonal and self-perception, group task performance, and matching individual and organizational position complexity, are reviewed. Implications of complexity level for organizational design and the design of information and training systems are noted.

INTRODUCTION

During the past five decades there has been a growing body of research that I believe is highly relevant to our understanding of individual differences in human performance, including values, attitudes, motives, creativity, and stylistic leadership and work behavior. This research concerns the higher-order structural personality dimension of cognitive complexity, or concreteness-abstractness of thinking. The fact that the high technology societies of the world appear to be undergoing significant, yet understandable age-related demographic changes in this higher-order personality dimension further enhances its value to us in understanding human performance, including how it relates to organizational design, management, and the structure of information and training systems.

This area of structured personality research had its origins in the classical work of Piaget (1948) on child development. Among others, one group of researchers of particular relevance to this paper has extended the study of concreteness-abstractness into the adult range: Professors O.J. Harvey, D. E. Hunt, and H. Schroder (1961) in
the area of conceptual functioning or *conceptual systems* and behavior.

Cognitive complexity, or concreteness-abstractness, is reported to have two major structural dimensions, *differentiation* and *integration* (Bariff & Lusk, 1971; Harvey, et al., 1961; King & Hicks, 2007). Operationally, differentiation can be defined as the number of dimensions extracted from a set of data, and integration as the number of interconnections between rules for combining structured data (Bariff and Lusk, 1971). A concrete cognitive style is one in which relatively little differentiation is used in structuring concepts. Experiential data are categorized by the individual into relatively few conceptual dimensions, and within concepts, there exists relatively few categories or shades of gray. In the extreme, a concept is divided into just two categories, characteristic of either/or, black/white, absolutist thinking. In addition, concrete thinkers are relatively poor at integrating conceptual data in assessing complex problems and developing unique or creative, insightful solutions. In contrast, cognitively complex persons tend to demonstrate high differentiation and effective integration in their conceptualizing (Harvey, 1966; Harvey, et al., 1961).

Although all persons tend to become more abstract over time, our development curve tends to flatten in early adulthood. At what degree of cognitive complexity this plateauing occurs, and to what extent, appears to depend primarily on two factors: How open one is to learning from one’s experience, and how much exposure one has had to diversity. We all start out in life with very limited exposure to diversity, and thus have few conceptual categories in which to place experiential information, and few rules and combinations of rules to integrate our experiential information in problem solving and decision making. As we gain new experiences, and *if* we are open to learning from those experiences, we develop new conceptual categories and more rules and rule combinations for integrating our conceptual data (Harvey, 1966).

How open we are to learning from our experiences depends on the nature of one’s early training environment at home and school (Blatt, 1971). In particular, the nature of the “trainer” role appears to be critical. In general, the more absolutist and authoritarian the parent, teacher or other trainer, the greater is the likelihood that *active* exposure was inhibited, and that the child will plateau at a relatively concrete level of conceptual functioning (Harvey, et al., 1961). The more relativistic and less authoritarian the training, the more the trainer encourages the child to think things through and draw personal conclusions, and the more the trainer instills a strong positive sense of self worth in the child, the more abstract or cognitively complex the child will become in his or her conceptual functioning as an adult.

**COGNITIVE COMPLEXITY AND CONCEPTUAL SYSTEMS**

During the mid 1900’s Professors O.J. Harvey of the University of Colorado, David E. Hunt of Syracuse University, and Harold M. Schroder of Princeton University, who had been doing attitude research, noted that persons who had similar attitudes towards one thing tended to have similar attitudes towards many other things – that they had a similar attitude pattern. By the same token, they were able to identify others who had attitude patterns, but different from the first group’s. These researchers wondered if these different attitude patterns really were reflections of basic underlying differences in how people perceive reality (i.e., if you and I conceptualize reality differently, then it makes sense that we would have different attitudes about issues in our world); and so they set about to determine if this was the case. (O. J. Harvey, personal communication, 1978).

Based on their original research, Harvey, et al. (1961) concluded that there appear to be at least four fundamentally different ways in which people organize or structure and integrate their